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EXAMINER	
ENGLAND, DAVID E	

ART UNIT	PAPER NUMBER
2143	9

DATE MAILED: 12/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/578,019	KRAUSE ET AL.	
	Examiner	Art Unit	
	David E. England	2143	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 September 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-53* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-53* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. Claims 1 – 53 are presented for examination.

2. Claims and rejections are restated for the Applicant to reference and have no changes.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1 – 4, 9 – 11, 15, 16, 22, 29 – 33, 41, 42 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. U.S. Patent No. 6151696 (hereinafter Miller) in view of Nessett et al. U.S. Patent No. 5968176 (hereinafter Nessett) in further view of Van Loo et al. U.S. Patent No. 6064672 (hereinafter Van Loo).

3. As per claim 1, as interpreted by the Examiner, Miller teaches a data processing system comprising:

4. a source device participating in a multicast group and including:

5. a first source application instance (AI) producing a first unit of work stream, (e.g. col. 2, line 34 – col. 4, line 11 & col. 4, line 55 – col. 5, line 22); and

6. communication services (CS), (e.g. col. 2, line 34 – col. 4, line 11 & col. 4, line 55 – col. 5, line 22);

7. multiple destination devices participating in the multicast group, each destination device in the multicast group including:

8. at least one destination AI which consumes units of work, (e.g. col. 2, line 34 – col. 4, line 11 & col. 4, line 55 – col. 5, line 22); and CS, (e.g. col. 2, line 34 – col. 4, line 11 & col. 4, line 55 – col. 5, line 22);

9. multiple source and destination resources (SDRs), each SDR implementing a reliable transport service between the source device and a corresponding one of the multiple destination devices in the multicast group for delivery of the first unit of work stream at the corresponding destination device, (e.g. col. 2, line 34 – col. 4, line 11 & col. 4, line 55 – col. 5, line 22). Miller does not specifically teach communication services/fabric providing communication between the source device and the multiple destination devices; and

10. guaranteeing strong ordering of the first unit of work stream received at the corresponding destination device. Nessett teaches communication services/fabric providing communication between the source device and the multiple destination devices, (e.g. col. 13, lines 9 – 31 & col. 11, line 54 – 67 & col. 12, line 66 – col. 13, line 31). It would have been obvious to one skilled in the art at the time the invention was made to combine Miller with Nessett because it would be more efficient and reliable for a system to utilize a physical connection rather than a wireless one. Van Loo teaches guaranteeing strong ordering of the first unit of work stream received at the corresponding destination device, (e.g. col. 1, lines 21 – 60 & col. 3, lines 11 – 61). It would have been obvious to one skilled in the art at the time the

invention was made to combine Van Loo with the combine system of Miller and Nessett because utilizing the properties of strong ordering, keep track of transmitted packets in a specific order, would make the system function more efficient as to the tracking of lost packets.

11. As per claim 2, as interpreted by the Examiner, Miller teaches the CS in the source device verifies that a predetermined percentage of destination AIs in the multicast group reliably receives each unit in the first unit of work stream, (e.g. col. 11, line 39 – col. 12, line 26).

12. As per claim 3, as interpreted by the Examiner, Miller teaches the predetermined percentage is 100% of the destination AIs, (e.g. col. 11, line 39 – col. 12, line 26).

13. As per claim 4, as interpreted by the Examiner, Miller teaches the predetermined percentage is less than 100% of the destination AIs, (e.g. col. 11, line 39 – col. 12, line 26).

14. As per claim 9, as interpreted by the Examiner, Miller teaches the CS in the source device replicates the first unit of work stream for transmission to the destination AIs in the multicast group, (e.g. col. 2, line 42 – col. 4, line 11 & col. 12, line 53 – col. 13, line 50).

15. As per claim 10, as interpreted by the Examiner, Miller teaches the communication services/fabric includes at least one replicater component for replicating the first unit of work stream for transmission to the destination AIs in the multicast group, (e.g. col. 2, line 42 – col. 4, line 11 & col. 12, line 53 – col. 13, line 50).

16. As per claim 11, Miller teaches the data processing system further comprises:

17. at least one middleware AI, (e.g. col. 12, line 53 – col. 13, line 50).

18. As per claim 15, as interpreted by the Examiner, Miller teaches an AI, middleware AI, or CS performs a get attribute operation to query current attributes of the multicast group, (e.g. col. 9, lines 32 – 39 & col. 11, line 40 – col. 12, line 26).

19. As per claim 16, as interpreted by the Examiner, Miller teaches an AI, middleware AI, or CS performs a set attribute operation to set multicast group attributes, (e.g. col. 9, lines 32 – 39 & col. 11, line 40 – col. 12, line 26).

20. As per claim 30, as interpreted by the Examiner, Miller teaches consuming the first unit of work stream with the at least one destination AI at each of the multiple destination devices participating in the multicast group, (e.g. col. 2, line 34 – col. 4, line 11 & col. 4, line 55 – col. 5, line 22).

21.

22. As per claim 22, as interpreted by the Examiner, Miller, Nessett and Van Loo do not specifically teach the source device also functions as a destination device and at least one of the destination devices also functions as a source device. Official Notice is taken that it was a common practice to have the source device also functions as a destination device and at least one

of the destination devices also functions as a source device at the time the instant invention was made.

23. It would have been obvious to one having ordinary skill in the computer art at the time of the invention was made to modify the data processing system disclosed by the combination of Miller, Nessett and Van Loo to have the source device also functions as a destination device and at least one of the destination devices also functions as a source device using the teaching of common practice. The modification would be obvious because one of ordinary skill in the art would be motivated to add this limitation because the source and destination is determined by whichever node in the network wants to multicast to other nodes on the network. If later after the multicast session is finished, the previous destination node want to multicast information across the network all one would have to do is set up a session and add the nodes that wish to receive the information.

24. Claims 29, 31 – 33, 41, 42 and 46 are rejected for similar reasons as stated above.

25. Claims 5 – 8, 18 – 20, 34 – 37 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller (6151696) in view of Nessett (5968176) in further view of Van Loo (6064672) in further view of Block et al. (6192417) (hereinafter Block).

26. As per claim 5, as interpreted by the Examiner, Miller, Nessett and Van Loo do not specifically teach an acknowledgement counter which counts acknowledgements received from the corresponding destination devices in the multicast group indicating that the corresponding

destination device has received a unit of work in the first unit of work stream. Block teaches an acknowledgement counter which counts acknowledgements received from the corresponding destination devices in the multicast group indicating that the corresponding destination device has received a unit of work in the first unit of work stream, (e.g. col. 15, line 51 – col. 16, line 39 & col. 18, line 41 – col. 19, line 4). It would have been obvious to one skilled in the art at the time the invention was made to combine Block with the combine system of Miller, Nessett and Van Loo because it would be more efficient for a system to count the number of acknowledgements so to keep track of the different packets that have not arrived or have errors in them and have these packets retransmitted.

27. As per claim 6, as interpreted by the Examiner, Miller teaches the predetermined percentage of destination AI but Miller, Nessett and Van Loo do not specifically teach the CS in the source device generates a completion event when the acknowledgement counter indicates that the multicast group have acknowledged the unit of work has been received. Block teaches the CS in the source device generates a completion event when the acknowledgement counter indicates that the multicast group have acknowledged the unit of work has been received, (e.g. col. 15, line 51 – col. 16, line 39 & col. 18, line 41 – col. 19, line 4). It would have been obvious to one skilled in the art at the time the invention was made to combine Block with the combine system of Miller, Nessett and Van Loo because it would be more efficient if the system utilized a percentage of acknowledgement counters to almost predict the type of service that a specific node might need for the missing acknowledgements that need to be retransmitted.

28. As per claim 7, as interpreted by the Examiner, Miller, Nessett and Van Loo do not specifically teach the CS in the source device includes:

29. a bit-mask array which assigns a unique bit for each destination AI in the multicast group and clears each bit as a corresponding acknowledgment is received from the corresponding destination device in the multicast group indicating that the corresponding destination device has received a unit of work in the first unit of work stream. Block teaches the CS in the source device includes:

30. a bit-mask array which assigns a unique bit for each destination AI in the multicast group and clears each bit as a corresponding acknowledgment is received from the corresponding destination device in the multicast group indicating that the corresponding destination device has received a unit of work in the first unit of work stream, (e.g. col. 15, line 51 – col. 16, line 39 & col. 18, line 41 – col. 19, line 4). It would have been obvious to one skilled in the art at the time the invention was made to combine Block with the combine system of Miller, Nessett and Van Loo because it would be more efficient for a system to have separate indicators, (i.e. bit-mask array), to indicate which destination nodes did not receive a specific unit of work in the first unit of work stream and only have to send the specific unit of work in the first unit of work stream to a specific destination node instead of sending the unit of work in the first unit of work stream to every destination node in the network which could cause network congestion.

31. As per claim 8, as interpreted by the Examiner, Miller, Nessett and Van Loo do not specifically teach the CS in the source device generates a completion event when the bit-mask array has the predetermined percentage of bits cleared in the bit-mask array indicating that the

predetermined percentage of destination AIs in the multicast group have acknowledged the unit of work has been received. Block teaches the CS in the source device generates a completion event when the bit-mask array has the predetermined percentage of bits cleared in the bit-mask array indicating that the predetermined percentage of destination AIs in the multicast group have acknowledged the unit of work has been received, (e.g. col. 15, line 51 – col. 16, line 39 & col. 18, line 41 – col. 19, line 4). It would have been obvious to one skilled in the art at the time the invention was made to combine Block with the combine system of Miller, Nessett and Van Loo because for similar reasons as stated above.

32. As per claim 18, as interpreted by the Examiner, Miller, Nessett and Van Loo do not specifically teach an agreed to multicast address is employed to address AIs in the multicast group. Block teaches an agreed to multicast address is employed to address AIs in the multicast group, (e.g. col. 15, lines 19 – 50). It would have been obvious to one skilled in the art at the time the invention was made to combine Block with the combine system of Miller, Nessett and Van Loo because it would be more convenient for a system to use one multicast address port that can monitor, receive and transmit unit of work in the first unit of work stream in a multicast environment instead of having numerous multicast address port that could all send the same information across the network that could cause network congestion.

33. As per claim 19, as interpreted by the Examiner, Miller, Nessett and Van Loo do not specifically teach the CS in each device participating in the multicast group interprets the agreed to multicast address and responds to the agreed to multicast address to perform a reliable

multicast operation on behalf of the corresponding destination AI. Block teaches the CS in each device participating in the multicast group interprets the agreed to multicast address and responds to the agreed to multicast address to perform a reliable multicast operation on behalf of the corresponding destination AI, (e.g. col. 14, line 43 – col. 16, line 21). It would have been obvious to one skilled in the art at the time the invention was made to combine Block with the combine system of Miller, Nessett and Van Loo because of similar reasons as stated above.

34. As per claim 20, as interpreted by the Examiner, Miller, Nessett and Van Loo do not specifically teach the data processing system performs a reliable multicast operation having substantially the same semantic behavior relative to a given AI as an unreliable multicast operation. Block teaches the data processing system performs a reliable multicast operation having substantially the same semantic behavior relative to a given AI as an unreliable multicast operation, (e.g. col. 14, line 43 – col. 16, line 21). It would have been obvious to one skilled in the art at the time the invention was made to combine Block with the combine system of Miller, Nessett and Van Loo because it would be more convenient for a system to utilize protocols such a TCP and UDP for transmitting information across a network instead of using protocols that are not standard and having to add more overhead to a packet in order to transmit to other networks that do not support the non-standard protocol, causing a slower network.

35. Claims 34 – 37 and 44 are rejected for similar reasons as stated above.

36. Claims 12 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller (6151696) in view of Nessett (5968176) in further view of Van Loo (6064672) in further view of Hamilton et al. (6392993) (hereinafter Hamilton).

37. As per claim 12, as interpreted by the Examiner, Miller, Nessett and Van Loo do not specifically teach the CS in the source device includes a timing window and if the timing window expires without necessary conditions for a completion event occurring, then the middleware AI or CS tracks and resolves missing acknowledgments. Hamilton teaches the CS in the source device includes a timing window and if the timing window expires without necessary conditions for a completion event occurring, then the middleware AI or CS tracks and resolves missing acknowledgments, (e.g. col. 27, line 1 – col. 28, line 49). It would have been obvious to one skilled in the art at the time the invention was made to combine Hamilton with the combine system of Miller, Nessett and Van Loo because it would be more efficient for a system to retransmit a packet that has not been acknowledged so incase of a transmission error the system will retransmit the missing packet after an amount of time so to be certain that the destination node will receive the entire transmitted data, preventing missed packet errors.

38. Claim 38 is rejected for similar reasons as stated above.

39. Claims 13, 14, 17, 39, 40 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller (6151696) in view of Nessett (5968176) in further view of Van Loo (6064672) in further view of Muller et al. (6256740) (hereinafter Muller).

40. As per claim 13, as interpreted by the Examiner, Miller, Nessett and Van Loo do not specifically a given AI joins the multicast group by performing a multicast join operation, and the middleware AI or CS determines whether the given AI can join the multicast group, validates access rights, and informs the devices participating in the multicast group of changes in the group. Muller teaches a given AI joins the multicast group by performing a multicast join operation, and the middleware AI or CS determines whether the given AI can join the multicast group, validates access rights, and informs the devices participating in the multicast group of changes in the group, (e.g. col. 18, line 47 – col. 19, line 25). It would have been obvious to one skilled in the art at the time the invention was made to combine Muller with the combine system of Miller, Nessett and Van Loo because if an AI was required to have information that is being multicasted across the network it would be more efficient for a system to add the new AI to the multicast group instead of setting up and sending a separate transmission to that specific AI.

41. As per claim 14, as interpreted by the Examiner, Miller, Nessett and Van Loo do not specifically teach a given AI leaves the multicast group by performing a multicast leave operation, and the middleware AI or CS informs the devices participating in the multicast group to remove the given AI from the destination list, to complete all in-flight units of work as though the given AI were still present, and to not target the given AI for units of work not yet launched. Muller teaches a given AI leaves the multicast group by performing a multicast leave operation, and the middleware AI or CS informs the devices participating in the multicast group to remove the given AI from the destination list, to complete all in-flight units of work as though the given

AI were still present, and to not target the given AI for units of work not yet launched, (e.g. col. 31, lines 29 – 58). It would have been obvious to one skilled in the art at the time the invention was made to combine Muller with the combine system of Miller, Nessett and Van Loo because it would be more efficient for a system to have a given AI leave a multicast group if the AI does not need any of the information that is being transmitted. This will prevent the AI from receiving packets that are not needed and could make a network run faster because if the AI is not receiving any packets it will not have to send acknowledgements for transmitted information it receive and will not need retransmitted information.

42. As per claim 17, as interpreted by the Examiner, Miller, Nessett and Van Loo do not specifically teach middleware AI performs a remove member operation to remove a given AI from the multicast group without involving the given AI. Muller teaches middleware AI performs a remove member operation to remove a given AI from the multicast group without involving the given AI, (e.g. col. 31, lines 29 – 58). It would have been obvious to one skilled in the art at the time the invention was made to combine Muller with the combine system of Miller, Nessett and Van Loo because of similar reasons as stated above.

43. Claims 39, 40 and 43 are rejected for similar reasons as stated above.

44. Claims 21 and 23 rejected under 35 U.S.C. 103(a) as being unpatentable over Miller (6151696) in view of Nessett (5968176) in further view of Van Loo (6064672) in further view of VanDoren et al. (6279084) (hereinafter VanDoren).

45. As per claim 21, as interpreted by the Examiner, Miller, Nessett and Van Loo do not specifically teach the multiple SDRs are grouped into multiple SDR groups, wherein each of the multiple SDR groups includes at least one SDR and is assigned a unique priority level for effecting throughput and response time of units of work transmitted by the at least one SDR. VanDoren teaches the multiple SDRs are grouped into multiple SDR groups, wherein each of the multiple SDR groups includes at least one SDR and is assigned a unique priority level for effecting throughput and response time of units of work transmitted by the at least one SDR, (e.g. col. 24, lines 29 – 60). It would have been obvious to one skilled in the art at the time the invention was made to combine VanDoren with the combine system of Miller, Nessett and Van Loo because it would be more efficient if the system could differentiate from the different SDRs and if there are SDRs that require immediate attention they could be allocated bandwidth to accommodate the network and provide a faster multicasting session.

46. As per claim 23, as interpreted by the Examiner, Miller, Nessett and Van Loo teach all that is disclosed above and Nessett teaches source SDR resources, at the source device, transmitting the first unit of work stream in a serial unit of work stream having units of work in a defined order over the communication services/fabric, (e.g. col. 13, lines 9 – 31 & col. 16, lines 13 – 29). Miller, Nessett and Van Loo do not specifically teach each SDR includes:

47. destination SDR resources, at the corresponding destination device, receiving the serial unit of work stream, and demultiplexing the serial unit of work stream into units of work provided to the corresponding at least one destination AI. VanDoren teaches each SDR includes:

48. destination SDR resources, at the corresponding destination device, receiving the serial unit of work stream, and demultiplexing the serial unit of work stream into units of work provided to the corresponding at least one destination AI, (e.g. col. 10, line 61 – col. 11, line 8). It would have been obvious to one skilled in the art at the time the invention was made to combine VanDoren with the combine system of Miller, Nessett and Van Loo because if the serial connection transmitted information that was multiplexed it would be more efficient if the system utilized the demultiplexing function so the system could read and understand the data that it was sent.

49. Claims 24, 26, 27, 47, 51, 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller (6151696) in view of Nessett (5968176) in further view of Van Loo (6064672) in further view of VanDoren (6279084) in further view of Hamilton (6392993).

50. As per claim 24, as interpreted by the Examiner, Miller, Nessett, Van Loo and VanDoren do not specifically teach the destination SDR resources provide a negative acknowledgement (NAK) for a unit of work received ahead of its defined order. Hamilton teaches the destination SDR resources provide a negative acknowledgement (NAK) for a unit of work received ahead of its defined order, (e.g. col. 27, line 23 – col. 28, line 49). It would have been obvious to one skilled in the art at the time the invention was made to combine Hamilton with the combine system of Miller, Nessett, Van Loo and VanDoren because it would be more efficient for a system to send a NAK if information is sent out of order so not to cause errors in packet processing from packets that are sent and received in the network.

51. As per claim 26, as interpreted by the Examiner, Miller, Nessett, Van Loo and VanDoren do not specifically teach the destination SDR resources provide a positive acknowledgement (ACK) for each unit of work which is successfully received and processed by the destination SDR resources. Hamilton teaches the destination SDR resources provide a positive acknowledgement (ACK) for each unit of work which is successfully received and processed by the destination SDR resources, (e.g. col. 10, line 33 – col. 11, line 26 & col. 27, line 23 – col. 28, line 49). It would have been obvious to one skilled in the art at the time the invention was made to combine Hamilton with the combine system of Miller, Nessett, Van Loo and VanDoren because of similar reasons stated above.

52. As per claim 27, as interpreted by the Examiner, Miller, Nessett, Van Loo and VanDoren do not specifically teach the destination SDR resources provide a cumulative positive acknowledgement (ACK) for a set of units of work that indicate that all units of work in the set of units of work up to and including a current unit of work have been successfully received and processed by the destination SDR resources. Hamilton teaches the destination SDR resources provide a cumulative positive acknowledgement (ACK) for a set of units of work that indicate that all units of work in the set of units of work up to and including a current unit of work have been successfully received and processed by the destination SDR resources, (e.g. col. 10, line 33 – col. 11, line 26 & col. 27, line 23 – col. 28, line 49). It would have been obvious to one skilled in the art at the time the invention was made to combine Hamilton with the combine system of Miller, Nessett, Van Loo and VanDoren because it would be more efficient for a system to

transmit a cumulative ACK when all destination nodes have received there last units of work in the set of units of work so to save bandwidth on one transmission instead of sending multiple ACK messages that could slow down a network.

53. Claims 47, 51 and 52 are rejected for similar reasons as stated above.

54. Claims 25, 48 – 50 rejected under 35 U.S.C. 103(a) as being unpatentable over Miller (6151696) in view of Nessett (5968176) in further view of Van Loo (6064672) in further view of VanDoren (6279084) in further view of Hamilton (6392993) in further view of Miller (5553083) (hereinafter Miller2).

55. As per claim 25, as interpreted by the Examiner, Miller, Nessett, Van Loo, VanDoren and Hamilton do not specifically teach the destination SDR resources drop a unit of work received ahead of its defined order. Miller2 teaches the destination SDR resources drop a unit of work received ahead of its defined order, (e.g. col. 7, lines 36 – 54). It would have been obvious to one skilled in the art at the time the invention was made to combine Miller2 with the combine system of Miller, Nessett, Van Loo, VanDoren and Hamilton because it would be more efficient for a system to drop a unit of work received ahead of its defined order so all packets can be ACK in the order they were sent and not cause errors in having duplicate units of work that would be received later in transmission, which could also cause errors in the system.

56. As per claim 49, as interpreted by the Examiner, Miller, Nessett, Van Loo, VanDoren and Hamilton do not specifically teach temporarily storing a unit of work received at a corresponding destination device ahead of a defined order assigned to the unit of work. Miller2 teaches temporarily storing a unit of work received at a corresponding destination device ahead of a defined order assigned to the unit of work, (e.g. col. 7, lines 36 – 54). It would have been obvious to one skilled in the art at the time the invention was made to combine Miller2 with the combine system of Miller, Nessett, Van Loo, VanDoren and Hamilton because it would be more efficient if the system temporarily storing a unit of work received at a corresponding destination device ahead of a defined order so the system can decipher if the unit of work received is in fact ahead of a defined order.

57. As per claim 50, as interpreted by the Examiner, Miller and Nessett do not specifically teach performing a resynchronization operation to recover a missing intermediate unit of work. Van Loo teaches performing a resynchronization operation to recover a missing intermediate unit of work, (e.g. col. 13, lines 44 – 63). It would have been obvious to one skilled in the art at the time the invention was made to combine Van Loo with the combine system of Miller and Nessett because it would be more efficient for a system to return to a synchronic state as it was before so not to initiate errors in the system from transmitting information out of synch with the other nodes in the multicasting group.

58. Claim 48 is rejected for similar reasons as stated above.

59. Claims 28 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller (6151696) in view of Nessett (5968176) in further view of Van Loo (6064672) in further view of Mallory (6335933).

60. As per claim 28, as interpreted by the Examiner, Miller, Nessett and Van Loo do not specifically teach the destination SDR resources drop a unit of work in response to an indication that the unit of work is a duplicate unit of work. Mallory teaches the destination SDR resources drop a unit of work in response to an indication that the unit of work is a duplicate unit of work, (e.g. col. 9, lines 40 – 26). It would have been obvious to one skilled in the art at the time the invention was made to combine Mallory with the combine system of Miller, Nessett and Van Loo because of similar reasons as stated above.

61. Claim 53 is rejected for similar reasons as stated above.

62. Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miller (6151696) in view of Nessett (5968176) in further view of Van Loo (6064672) in further view of Block (6192417) in further view of VanDoren (6279084).

63. As per claim 45, as interpreted by the Examiner, Miller, Nessett and Van Loo do not specifically teach grouping the multiple reliable transport services into multiple reliable transport service groups, wherein each of the multiple reliable transport service groups includes at least one reliable transport service; and

64. assigning a unique priority level to each reliable transport service group for effecting throughput and response time of units of work transmitted by the at least one reliable transport service. Block teaches grouping the multiple reliable transport services into multiple reliable transport service groups, wherein each of the multiple reliable transport service groups includes at least one reliable transport service, (e.g. col. 14, line 43 – col. 16, line 21). It would have been obvious to one skilled in the art at the time the invention was made to combine Block with the combine system of Miller, Nessett and Van Loo because of similar reasons stated in the claims above. VanDoren teaches assigning a unique priority level to each reliable transport service group for effecting throughput and response time of units of work transmitted by the at least one reliable transport service, (e.g. col. 24, lines 29 – 60). It would have been obvious to one skilled in the art at the time the invention was made to combine VanDoren with the combine system of Miller, Nessett, Van Loo and Block because of similar reasons stated in the claims above.

Response to Arguments

65. Applicant's arguments filed 9/29/2003 have been fully considered but they are not persuasive.

66. In the remarks, Applicant argues in substance that the Miller patent does not teach or suggest implementing multiple non-generic reliable transport services as defined in independent claims 1 and 29.

67. As to part 1, Examiner would like to draw the Applicants attention to the rejection as restated above and more specifically the claim language and the reference of Miller. The claim language of claims 1 and 29 do not specifically state in any form, implementing multiple non-generic reliable transport services. Furthermore, Miller teaches the use of the TCP/IP protocol, (e.g. col. 5, line 66 – col. 6, line 13 & col. 13, lines 19 – 32), and the use of ICMP and ping which are all types of non-generic reliable transport services, (e.g. col. 3, line 60 – col. 4, line 11, *"multicast ping"*).

68. In the remarks, Applicant argues in substance that the Van Loo patent teaches away from applying the concept of strong sequential ordering outside the context of ringlet systems and that Van Loo does not teach or suggest a structure employing SDRs and placing the SSO functionality into one or more of the SDRs. Also, the present specification enables one skilled in the art to practice the claimed invention in network architectures other then the ringlet topology.

69. As to part 1, Examiner would like to draw the Applicants attention to the rejection as restated above and more specifically the claim language and the reference of Van Loo.

70. As restated above, Van Loo is used to teach guaranteeing strong ordering of the first unit of work stream received at the corresponding destination device, (e.g. col. 1, lines 21 – 60 & col. 3, lines 11 – 61). The placing of SSO functionality into one or more of the SDRs is as stated,

71. *FIG. 3 illustrates strong sequential ordering (SSO): no packet is received out of the order in which it was sent--although it may appear twice, it does not appear out of order. FIG. 4 illustrates the use of both SSO and nonidempotent commands; not only is the sequence*

preserved, but because of the nature of nonidempotent commands, no command in a conventional system may be executed twice by the destination node. Note in FIG. 4 that [producerId, pLabel] are common to send.sub.-- pkt and acknowledge; also, [producerId, pLabel] are visible to each node, absent errors.

72. This along with other areas of the Van Loo patent, teach that the SSO is placed into one or more SDRs. This can also be found in col. 11, line 10 – col. 13, line 15. It is stated that the sections stated do not limit in any way the teachings of Van Loo.

73. Furthermore, as to the cited section that the Applicant points out, (e.g. col. 12, line 6), stating,

74. "Fundamental to the proposal is the assumption that local ringlet transmission is unidirectional and bypasses no nodes. That is, when a node sends either a send packet or a response packet, then every node on the subring will see either that packet or the acknowledgment for that packet flow through the node's bypass buffer.

75. This assumption underlies the basic operation of the P1394.2 ringlet (although in a proposed P1394.2 option, a "short cut" routing feature would not support SSO ordering). As a result of this, for every send response packet that is transmitted, each node on the ringlet can observe both the producerId and the pLabel fields for either the send/response packet or its acknowledgment."

76. This section as to deal with a "short cut" feature of the P1394.2 that is an option, making one believe that it is no a standard that is always implemented. The Examiner would like to draw the Applicant's attention to the paragraphs ahead and after the selected cited reference, (e.g. col. 11, line 10 – col. 13, line 15).

77. "The target for both send and receive packets is identified by a global, 16 bit "targetId" field. In the absence of errors, some unique node on the ringlet, perhaps a bridge or switch node, will recognize the targetId address and strip the packet. A "sourceId" field uniquely identifies the global address of the sending node.

*78. Other fields, which are included within the packet for returning local ringlet acknowledgment, are fundamental to the proposed SSO ordering enhancement. These include the (6 bit) "producerId" field, which identifies the nodeId that originated this packet **on its local ringlet**, and the (8 bit) "pLabel" field, which is assigned by the "producerId" node to uniquely identify this packet. Both the producerId and pLabel fields have meaning only within a local ringlet and will be.*

79. The P1394.2 protocol supports split response transactions, where a response is required. Packets for (asynchronous, directed) service are subject to two conditions that may inhibit packet delivery:

80. the packet--or its acknowledgment--may suffer a CRC error or other detectable error; he claim that the pLabel and producerId fields can be used to implement an SSO ordering mechanism in a ringlet topology depends on certain information being unambiguously known to both the producer node and the receiver node. Here is a summary of this information.

81. The basic concept here is that each packet may have two uses in the ringlet: to transmit commands or data in the SSO program space, and to transfer ringlet sequence state information. Only the sender knows the sequence number of transmitted packets, and only the receiver knows the last valid, accepted packet. Pictorially:"

82. In these sections, among others throughout the patent of Van Loo, teach that SSO can be used efficiently with ringlet. Note that the sections cites do not limit the scope of the reference in any way.

Conclusion

83. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David E. England whose telephone number is 703-305-5333. The examiner can normally be reached on Mon-Thur, 7:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A. Wiley can be reached on 703-308-5221. The fax phone numbers for the organization where this application or proceeding is assigned are none for regular communications and none for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is none.

David E. England
Examiner
Art Unit 2143

De
December 9, 2003

DAVID WILEY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100